REMARKS

Claims 1, 6, and 9 were rejected as unpatentable over Smith in view of Marko. Claims 3 and 4 were rejected as unpatentable over Smith in view of Marko in view of Carson. Claim 5 was rejected as unpatentable over Smith in view of Marko in view of Kim. Claim 7 was rejected as unpatentable over Smith in view of Marko in view of Rattlingourd. Claim 8 was rejected as unpatentable over Smith in view of Marko in view Rattlingourd in view of Kim in view of Tucci. Applicant request reconsideration.

Claim 1 is the only independent claim and discussion is generally limited to it, though, it is noticed that claim 8 was rejected on a combination of five cited references, which claim 8, in this view, would seem highly unobvious. However, applicant prior arguments may not have been clear as to how a random walk filter is actually implemented.

The present invention has sufficient novelty residing in the use of random walk filtering. The random walk filtering is for determining when transition pulses, that is, the adjusted transition pulses, should be delayed. The random walk filtering smoothly adjusts the adjusted transition pulses to cause the sampling of the baseband waveform at correct times for accurate detecting of data bits encoded within the baseband signal over many bit periods. In order to perfect this random walk filtering adjustment of the adjusted transition pulses, a predetermined first threshold value is used. This predetermined first threshold count value is a number. This predetermined first threshold count is

compared to the accumulated number, that is, the count of the early and lags signals that result from comparisons between the transition pulses to the adjusted transition pulses. The early signals and lag signals are summed by magnitude counting as the accumulated running count as a number. Each time an early signal is encountered, the running count of the counter is incremented, and, each time a lag signal is encountered, the running count of the counter is decrement. Hence, and assuming that the magnitude of the running count has not exceeded the first predetermined count value when an adjustment would otherwise occur, the running count can increase and decrease through the reception of many early and lags signals. This randomly walk of the accumulated running count is similar to Brownian motion that randomly walks over many bit periods and moves between positive and negative values of this predetermined first threshold count value. The accumulative running count moves between the positive and negative values between adjustments of the adjusted transition pulses.

Consequently, and necessarily, the adjustment determination, when the running count exceeds the predetermined first threshold count value, must occur after and over a plurality of bit periods, that is to say, there must be a plurality of early or a plurality of lag signals for an adjustment to occur.

The transition pulses are generated from, and hence, the transition pulses are synchronized to the baseband signals. The early and lag signals are generated from the transition pulses, and hence, the early and lag signals are also synchronized to the

baseband signal. The data bits are encoded in the baseband signal and hence the data bits are synchronized to the baseband signal. The increments and decrements of the running count occur at the instance of the early and lag signal and hence the running count is also synchronized to the baseband signal.

When the running count exceeds the predetermined count value upon the occurrence of an early or lag signal, the adjusted time pulse delay signal adjusts the transition pulses for adjusting the adjusted timing pulses and hence the adjusted timing pulses are synchronized to the baseband signal. When the transition pulses occur offset from the adjusted timing pulses, early and lag signals are generated, and the count randomly walks by random increments and decrements. But, when the offset between the transition pulses and adjusted pulses become great, leading to poor data detection, the running count is reset, the random walk begins again, and the offset is reduced to zero at that point in time, and hence, recurringly is reduced to zero for improving the data detection. As the counter randomly walks, that is, counts the early and lag signals, the running count occurs over a plurality of data bits.

The data bits, transition pulses, adjusted timing pulses, early signals, lag signals, and baseband signal, as well as the detected bit stream, are all in synchronism, save for only the offset between the transition pulses and the adjusted timing pulses during the random walk of the running count over a plurality of bit periods.

Claim 1 has been amended to clearly recite limitations that necessarily require this random walk counting of the early and lag signals through limitations that the counter is for counting early and lag signals over a plurality of data bits, and hence, a plurality of early and lag signals. Claim 1 has been amended to be more particular. Claim 1 indicates that the adjusted timing pulses are synchronized to the data transition pulses. The data transition pulses that are synchronized to the baseband signal so that the early and lag signals are generated, if at all, for respective bit periods, by virtue of being in synchronism. Hence, the early and lag signals are generated for a plurality of bit periods prior to an adjustment.

Random walking of the early and lag running count over a plurality of data bits provides a form of filtering, that is, random walk filtering. The random walk filtering makes adjustments not in view of only one data bit, but rather, by filtered, that is, the adjustment is a result of many successive early or lag signals over many data bit periods, so as to smooth out the adjustment process. That is, the adjustments are made in view of an offset over many data periods and not just one data period. This smoothing affect to the adjustments of the adjusted timing pulses of the random walk filtering provides for improved data detection performance over many bits of a detected bit stream. The cited references do teach the use of an early signal or a lag signal for adjusting the adjusted timing pulses.

The cited references do teach threshold values for determining when to issue early and lag signals over a single bit period for adjusting the adjusted timing pulses for single bit data detection.

The cited references do not teach nor remotely suggest the accumulation of early and lag signals by counting, that is random walk counting, over a plurality of data bits, for adjusting the adjusted timing pulses one time over a plurality of bit periods. Allowance of the claims is requested.

Respectfully Submitted

Derrick Michael Reid

Derrick Michael Reid

Derrick Michael Reid, Esq.
The Aerospace Corporation
PO Box 92957 M1/040
Los Angeles, Ca 90009-2957
Reg. No. 32,096

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